Source Water Assessment and Protection (SWAP) Report for Scantic Valley Water District

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- Inventory land uses within the recharge areas of all public water supply sources;
- Assess the susceptibility of drinking water sources to contamination from these land uses; and
- Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared: October 28, 2003

Table 1: Public Water System (PWS) Information

PWS NAME	**Scantic Valley Water District**
PWS Address	**Hampden**
City/Town	**Hampden, Massachusetts**
PWS ID Number	**1120023**
Local Contact	**Mr. Michael Framarin**
Phone Number	**413-624-3349**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1120023-01G	240	592	Moderate
Well #2	1120023-02G	275	728	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road de-icing, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

Hampden is a town in southern western Massachusetts along the Connecticut border. The Scantic Valley Water District is a small municipal district with 10 service connections serving residential homes and one educational/nature center. Hampden does not have a municipal wastewater system and therefore all facilities utilize on-site septic disposal systems. The District operates two 6-inch diameter, gravel developed wells located within the watershed of Big Brook. Based on the results of 48-hour pumping tests conducted in 1998 and 1999, the sources have estimated yields of

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

approximately 15 gallons per minute. However, because of Zone I land use restrictions, the approved withdrawal rates for the wells are 6 gpm and 10.25 gpm, respectively.

The Zone I is the protection area immediately surrounding the wellhead, while the IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The Zone I radii, based on the approved daily pumped volume from the wells are 240 feet and 275 feet, respectively. The IWPA radii are 592 and 728 feet, respectively. Please refer to the attached map of the Zone I and IWPA.

Wells #1 and #2 are located within an unconfined sand and gravel deposit. The upland immediately adjacent to the wells is part of an eroded glacial outwash delta and stream terrace deposit. The well logs for the wells did not indicate a confining, protective clay layer in the vicinity of the wells. The deposits were laid down in a bedrock valley during the recession (melting) of the glaciers some 12,000 year ago. More recent alluvial deposits have been laid in the floodplain of Big Brook. The bedrock underlying the area is mapped as the Glastonbary Gneiss. Wells located in this type of geologic setting are considered to have a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration from the surface.

For information on current water quality monitoring results, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Refer to Table 1 for additional information regarding the location of the well and activities within the protection areas.

2. Discussion of Land Uses in the Protection Areas

The protection areas for wells #1 and #2 are in compliance with the Zone I requirements and do not have any activities except passive recreation within it. The Zone I is owned and controlled by the Audubon Society but there is a conservation restriction on the land that was approved by the DEP. The IWPA includes low-density residential development and the Audubon nature center along with the associated parking, septic systems and activities. It is likely that if the Zone II were delineated for the wells, it may not include some of the identified threats within this report. There are few potential sources of contamination within the mapped drinking water supply protection areas.

Key issues include:

1. **Transportation corridor**
2. **Residential land use**

Table 2: Table of Activities within the Water Supply Protection Areas for Both Sources

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Transportation corridor	No	Yes	Moderate	Limit road salt usage and provide drainage away from wells
Residential	No	Yes	Moderate	Supply BMPs to residents
Institutional – nature center	No	Yes	Moderate	Septic system and parking

*** -For more information, see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website- www.state.ma.us/dep/brp/dws/.**

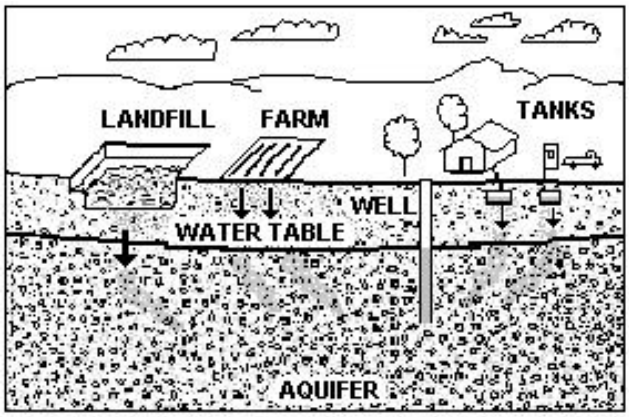

Figure 1: Example of how a well could become contaminated by different land uses and activities.

The overall ranking of susceptibility to contamination for the Scantic Valley Water District wells is moderate based on the presence of a few moderate ranked potentially threatening land uses or activities in the IWPA. As noted, the actual recharge area for the wells may be somewhat different than the IWPA and the District may wish to consider delineating the Zone II to assist in the long-term protection of the wells. Please refer any questions about water quality at the facility to the contact person listed in Table 1.

1. Transportation corridor – The well is located on a rural residential road that is relatively lightly traveled. The greatest threat from the road are deicing materials, an accidental spill and/or illegal access. The area has been fenced recently to control access.

Transportation corridor Recommendations:

- Work with the Town to ensure that road runoff is directed where feasible, to an area downgradient of the well.
- Prepare an Emergency Response Plan that includes coordination between the DEP, the Water Department the Town and State Police in the event of an accident near the wellhead.

2. Residential Land Use – There are several residences within the IWPA protection area. If managed improperly, activities associated with residential areas can contribute to drinking water contamination. Common potential sources of contamination include:

- **Septic Systems** – Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the groundwater because septic systems leach to the ground. If septic systems fail or are not properly maintained they could be a potential source of microbial contamination.
- **Household Hazardous Materials** - Hazardous materials may include automotive wastes, paints, solvents, pesticides, fertilizers, and other substances. Improper use, storage, and disposal of chemical products used in homes are potential sources of contamination.
- **Heating Oil Storage** - If managed improperly, Underground and Aboveground Storage Tanks (USTs and ASTs) can be potential sources of contamination due to leaks or spills of the fuel oil they store.
- **Stormwater** – Catch basins transport stormwater from roadways and adjacent properties to the ground and streams. As flowing stormwater travels, it picks up debris and contaminants from streets and lawns. Common potential contaminants include lawn chemicals, pet waste, and contaminants from automobile leaks, maintenance, washing, or accidents. Visit the Nonpoint Source pollution web site for additional information at http://www.state.ma.us/dep/brp/wm/nonpoint.htm.

Residential Land Use Recommendations:

- Educate residents on best management practices (BMPs) for protecting water supplies. Distribute the fact sheet "Residents Protect Drinking Water" available in Appendix A and on www.mass.gov/dep/brp/dws/protect.htm, which provides BMPs for common residential issues.

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

For More Information:

Contact Catherine V. Skiba in DEP's Springfield Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier and town boards.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will further enhance the protection of the well and minimize its susceptibility to contamination. The Scantic Valley Water District should review and adopt the key recommendations above and the following:

Priority Recommendations:

- Continue efforts to control access to Zone I and monitor activities in the IWPA area.
- Consider delineating the Zone II for the wells to better focus protection on the actual recharge areas for the wells.

Zone I:

- Keep non-water supply activities out of the Zone I.
- Use BMPs within the Zone I for treatment chemicals.
- Continue regular inspections of the Zone I. Look for illegal dumping, evidence of access or vandalism.

Planning:

- Consider investing in the delineation of a Zone II contribution area to improve protection planning for the well. In the meantime, work with local planning and Board of Health officials to develop Aquifer Protection District Bylaws and to include the IWPA in that district.
- Have a plan to address short-term water shortages and long-term water demands.
- Keep the phone number of a bottled water company readily available in the event of an emergency.
- Supplement the SWAP assessment with additional local information, and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

These recommendations are only part of your on-going local drinking water source protection. Citizens and community officials should use this SWAP report to encourage discussion of local drinking water protection measures.

Copies of this report have been forwarded to the water supplier and Town officials.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact sheet